



Western Cape Education Department  
**Directorate: Curriculum FET**

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## AGRICULTURAL SCIENCES

### REVISION BOOKLET

TERM 2

2025

Grade 10

This revision program is designed to assist you in revising the critical content and skills covered from term two. The purpose is to prepare you to understand the key concepts and to provide you with an opportunity to establish the required standard and the application of the knowledge necessary to succeed in the NCS examination.

The revision program covers the following topics:

- Sustainable resource utilization:
  - Soil conservation and management
  - Water management & Pollution
- Soil science
  - Soil and Minerals
  - Rocks & Formation

## TABLE OF CONTENT

<b>Term 2</b>	<b>Mind Map: Sustainable resource utilization</b>	3
Week 1	Sustainable resource utilization:	4
Week 2	Soil conservation and management	5
Week 3 to 5	Water management & Pollution	7
	<b>Mind Map: Soil science</b>	9
Week 6 to 8	Soil and Minerals	10
Week 9	Rocks & Formation	12
	<b>Memorandum</b>	
Week 1	Sustainable resource utilization:	14
Week 2	Soil conservation and management.	16
Week 3 to 5	Water management & Pollution	17
Week 6 to 8	Soil and Minerals	18
Week 9	Rocks & Formation	21

### **Agricultural Resources:**

- Natural Resources & Agricultural Resources
- Types and Importance of Agricultural Resources
- Population pressure on natural resources
- Sustainable use of natural resources in agriculture



### **Soil conservation and management:**

- Soil degradation
- The types and processes of Land Degradation
- Impact of Land Degradation on Soil Productivity



### **Water management:**

- Water quality
- Water resources and supply
- Water consumption in agriculture
- Factors affecting water supply
- Water pollution due to agriculture
- Prevention of water pollution



*Sustainable Natural Resource Utilization*

### **Agricultural pollution:**

- Types of pollution
- Major types of pollution (soil and water)
- Economic impact of pollution
- Water Management in Agriculture



## Term 2: Week 1: Sustainable resource utilization:

1.1 Read the following scenario carefully and answer the questions that follow:

The basis of effective organic gardening is a well – treated soil. Farmers should feed the soil and not the plants. Most living creatures in the soil are microscopic – so small that we cannot see them with a naked eye. These creatures manage the soil, and it is important to keep them well supplied with their preferred foods, which are compost, manure and other organic food. As they feed, they steadily release a supply of well - balanced plant foods, which are used by growing plants. Adding organic material like compost to the soil improves its structure. Compost also helps to bind sandy soils, hence increasing their water holding ability, and to slow down leaching of nutrients. It also helps to loosen up clay soils improving aeration and drainage.

- 1.1.1 Suggest the method of farming encouraged in the above scenario that is beneficial to micro-organisms living in soil, the soil and plants. (1)
- 1.1.2 Name TWO benefits to the soil of using these fertilizers. (2)
- 1.1.3 Identify TWO indigenous methods of fertilizing the soil from the above scenario. (2)

1.2 In modern agriculture the need to protect the natural resources has become very important. Farmers use agricultural resources to produce agricultural products.

- 1.2.1 Give TWO examples of renewable resources. (2)
- 1.2.2 The following are examples of natural resources. Classify these resources in the box below into renewable and non-renewable. (6)

Oxygen; Forests; Coal; Water;  
Wood; Wild Animals.

1.3 Water is one of the most important resources for all aspects of our lives and is extremely important for agriculture. In South Africa water use is grouped into four broad categories as shown in the table below.

Purpose	Usage (%)
Domestic and urban	19
Industry and mining	15
Agricultural	44
Recreational	12
Sewage services	10

- 1.3.1 Draw a bar graph representing the water use in South Africa as shown in the table above. (5)
- 1.3.2 Suggest TWO main sources of water for agriculture. (2)

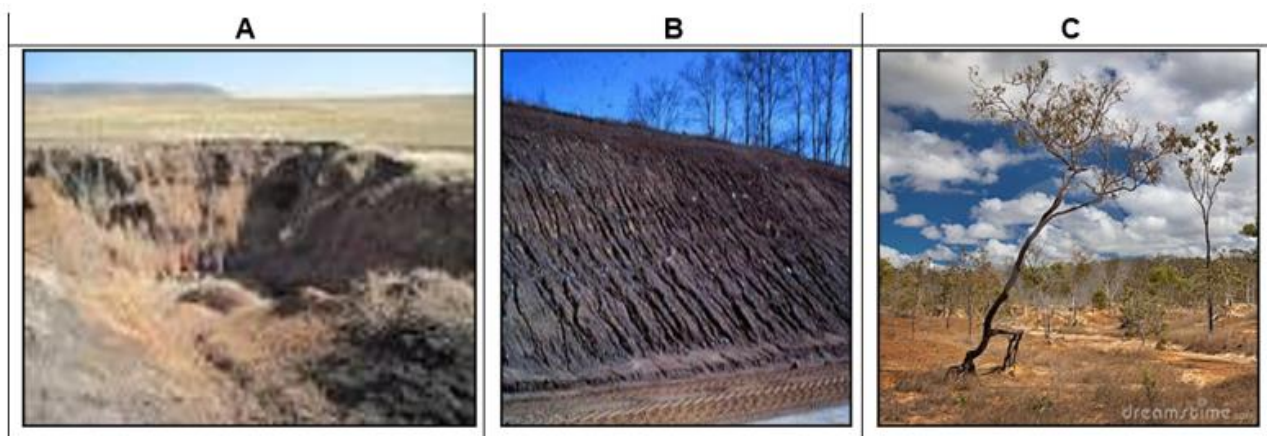
1.4 In modern agriculture the need to protect the natural resources has become very important.

- 1.4.1 Explain the meaning of a *natural resource*. (2)
- 1.4.2 Identify TWO important examples of primary natural resources that are utilized in agriculture. (2)
- 1.4.3 Differentiate between a primary and secondary natural resource. (4)
- 1.4.4 Indicate the importance of using our agricultural resources wisely. (2)

## Week 2: Soil conservation and management

- 2.1 Read the following article and then analyse the pictures illustrated below and answer the questions that follow:

**Soil degradation as a threat to sustainable utilisation of agricultural resources.**  
 Soil erosion is a physical form of soil degradation mostly caused by water, wind and incorrect farming practices such as sugar-cane production in KZN. Its intensity is influenced by the characteristics of the soil. On steep land, water running downhill cuts a channel deep into the soil, some water finds hollows in which to settle and low-lying channels through which to run. On flat land area, water covers the entire surface and land is gradually eroded by thin layers of water. The following pictures show different forms of soil degradation which could be the result of different factors.



- 2.1.1 Identify the type of soil erosion depicted by each of the pictures (A-C) above. (3)
  - 2.1.2 Deduce from the scenario the description of each type of soil erosion mentioned above in QUESTION 2.1.1 (3)
  - 2.1.3 Determine the type of soil degradation process outlined in the scenario. Motivate your answer. (2)
  - 2.1.4 Indicate TWO management practices that livestock farmers should adopt to ensure that their livestock does not impact negatively on the natural resources (2)
- 2.2 Agricultural pollution can be caused by various ways. Farmers must be aware of their environment.

2.2.1 Briefly explain the meaning of the term *soil pollution*. (2)

2.2.2 Name FOUR ways through which farmers contribute to soil pollution. (4)

2.3 A local farmer has approached you for advice in connection with his newly acquired land shown below. Examine it and consider the facts listed below the picture.



- Sparse vegetation
- Shallow topsoil
- Many ditches

2.3.1 Suggest the best agricultural production he can practice from the following possibilities indicated below:

**Pasture Production; Grain Production and Fruit Production (Orchard)** (1)

2.3.2 Justify your answer in question 2.3.1 (1)

2.3.3 Indicate possible environmental factors that could be responsible for the following conditions:

- (a) Little plant cover and organic material in the soil
- (b) Shallow topsoil and ditches (2)

### Week 3 ,4 & 5: Water management & Pollution

3. Read the following scenario and then answer the questions that follow:

1

The thin layer that covers the outermost part of the Earth is called soil. Soil is made up of a mixture of many things such as rocks, clay, sand, minerals, plant roots, water, gases, bones and dead animals. Rock minerals are also called inorganic soil fraction. Rock minerals are classified into primary and secondary minerals. There are three major types of rocks named according to how they are formed. Soil is formed from rocks, when rocks are subjected to soil forming factors over a period of time the outer layer loosens and crumbles to form soil. There are different agents responsible for the breaking down of rocks, namely physical, chemical and biological agents.

3.1.1 Indicate the THREE main types or categories of soil water. (3)

3.1.2 Conserving soil water is very important. Suggest TWO practical ways of conserving soil water. (2)

3.2 Read carefully the following scenario and answer questions that follow:

The basis of effective organic gardening is a well – treated soil. Farmers should feed the soil and not the plants. Most living creatures in the soil are microscopic – so small that we cannot see them with a naked eye. These creatures manage the soil, and it is important to keep them well supplied with their preferred foods, which are compost, manure and other organic food. As they feed, they steadily release a supply of well - balanced plant foods, which are used by growing plants. Adding organic material like compost to the soil improves its structure. Compost also helps to bind sandy soils, hence increasing their water holding ability, and to slow down leaching of nutrients. It also helps to loosen up clay soils improving aeration and drainage.

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3.2.1 Suggest the method of farming encouraged in the above scenario that is beneficial to micro-organisms living in soil, the soil and plants. (1)

3.2.2 Name TWO benefits to the soil of using these fertilizers. (2)

3.2.3 Identify TWO indigenous methods of fertilizing the soil from the above scenario. (2)

3.3 Agricultural pollution can be caused in various ways. Farmers must be aware of their environment. Briefly explain the meaning of the term *pollution*. (2)

4.

**Dams in South Africa**

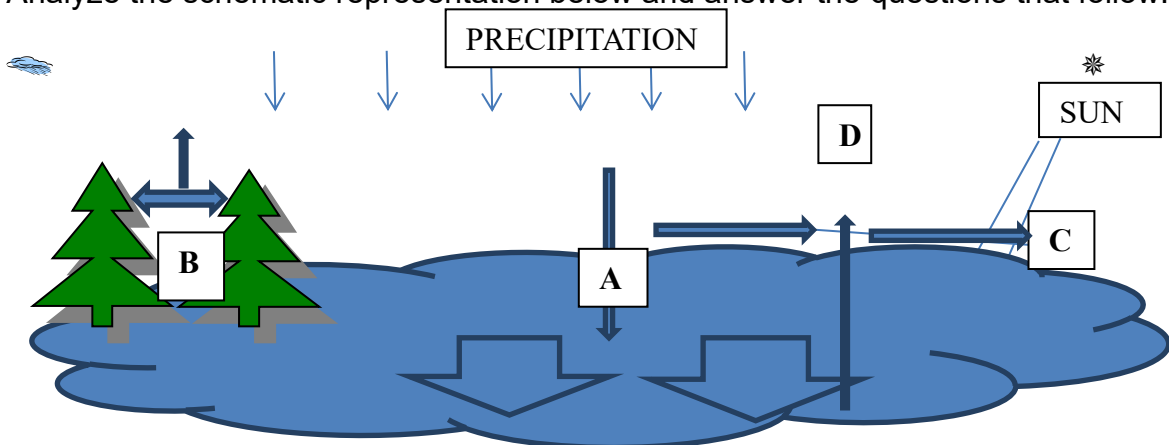
Gariiep Dam is the largest storage reservoir in South Africa with a total storage capacity of 5341 million cubic metres when full. It is located on the Orange River between the Eastern Cape to the south and the Free State to the north and about 30 km north east of Colesburg. It is situated in a gorge at the entrance to the Ruygite Valley some 5 km east of Norwalspont. Constructed in 1972, it stores water from the Orange River in a 100 km long reservoir which has a surface area of 350 square kilometres.

The dam forms part of the Orange River Project, one of the largest African irrigation projects, which was started in 1966. Its purpose is to provide water for the irrigation of 22 400 hectares of land for agricultural use and, at the same time, to provide drinking water for the cities of Bloemfontein and Port Elizabeth and at the same time, provide 'peak power' for the National power supply network.

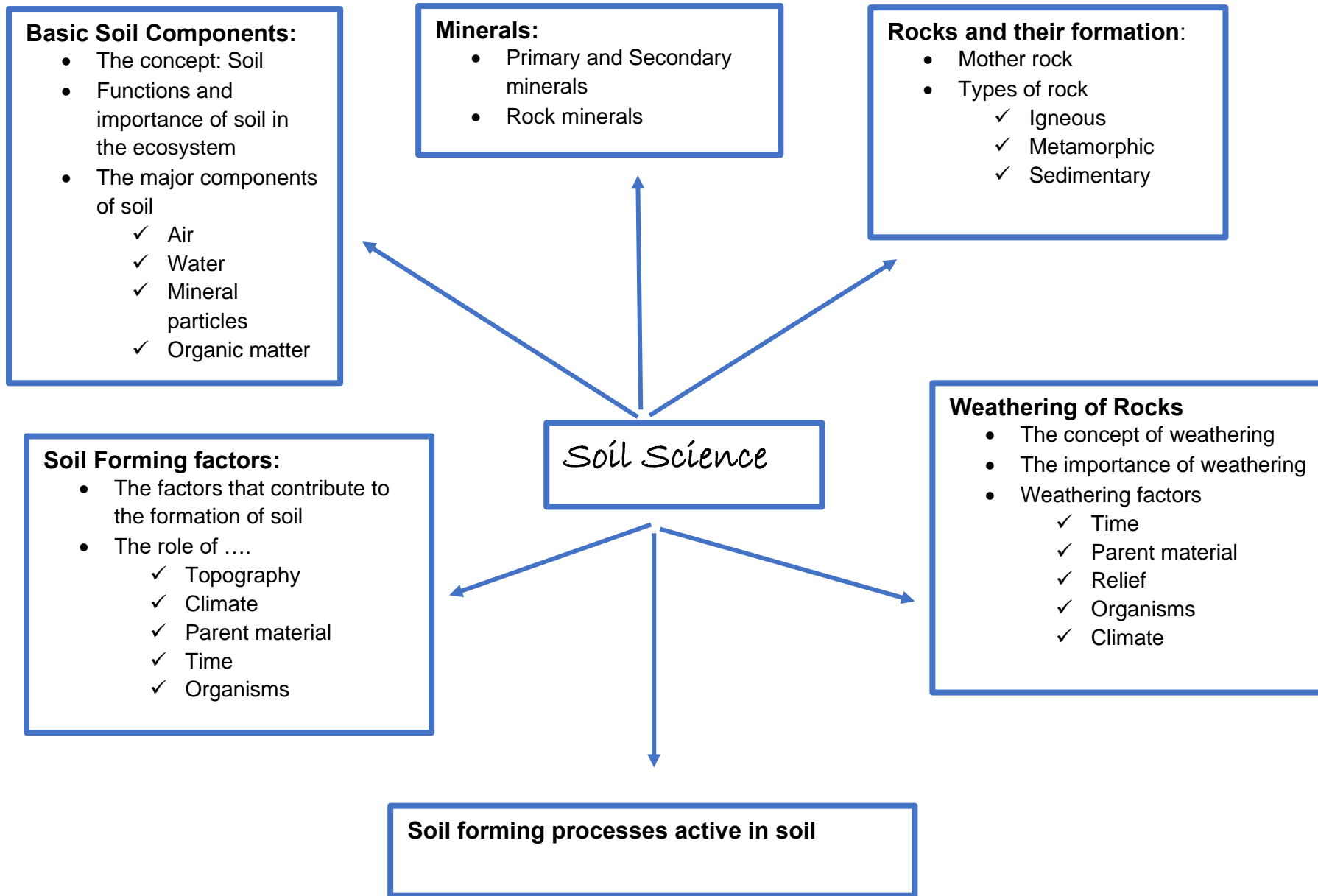
Dam	Full supply capacity (x10 <sup>6</sup> m <sup>3</sup> )	River
Gariiep	5 041	Orange
Vanderkloof	3 171	Orange
Sterkfontein	2 616	Nuwejaarspruit
Nuwejaarspruit Vaal	2 603	Vaal
Pongolapoort	2 445	Pongolo
Bloemhof	1 264	Vaal

- 4.1 The Gariiep is the largest storage dam in South Africa. Explain the importance of this reservoir. (3)
- 4.2 Use the information from the table and determine the difference in storage capacity between the largest and smallest dams in South Africa. (5)
- 4.3 List THREE purposes of dams in South Africa. (3)
- 4.4 Use the information from the table to draw a bar graph to indicate the dams and their capacity to store water. (6)

5. Analyze the schematic representation below and answer the questions that follow:



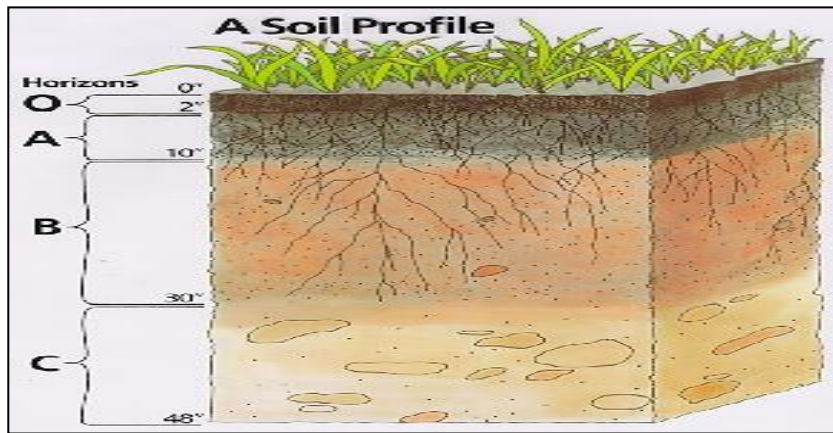
- 5.1 Determine the title or heading for this diagram or schematic representation shown above. (1)
- 5.2 Supply suitable names for the processes indicated as **A**, **B**, **C** and **D** (4)



**Week 6,7 & 8: Soil and Minerals**

**SOIL SCIENCE**

6.1 The diagram below represents a schematic representation of a soil profile:



Identify the soil horizons from the above diagram that are described by the following characteristics:

- 6.1.1 The major horizon characterized by fresh and partly decomposed organic material that develops in high rainfall areas. (1)
- 6.1.2 A horizon that consists of partly weathered rock. (1)
- 6.1.3 The major horizon that consists of clay, iron and aluminum oxides, as well as humus. (1)
- 6.1.4 The horizon characterized by a hard rock which is missing in the diagram above that can be found in a fully developed soil. (1)

6.2 When looking at the factors of soil formation, the international formula used is as follows:

$$C = f(P, R, Cl, O, T)$$

Provide the names of the FIVE factors of soil formation included inside the brackets of the formula (5)

6.3

There are many different types of rocks on Earth, but we can group them into three main groups based on how they are formed. Primary and secondary minerals are usually present in soils (primary minerals as sand and silt and secondary as clay particles)

6.3.1 Categorise the following minerals and rocks according the headings provided in the table below. There is ONE mineral / rock for each category in the table.

**[Granite; Quartz; Shale; Montmorillonite; Gneiss]**

<b>Primary minerals</b>	<b>Secondary minerals</b>	<b>Igneous rocks</b>	<b>Sedimentary rocks</b>	<b>Metamorphic rocks</b>	(5)
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6.3.2 Differentiate between primary and secondary minerals and give ONE example to each. (4)

6.4 The table below shows soil composition by volume expressed as a percentage:

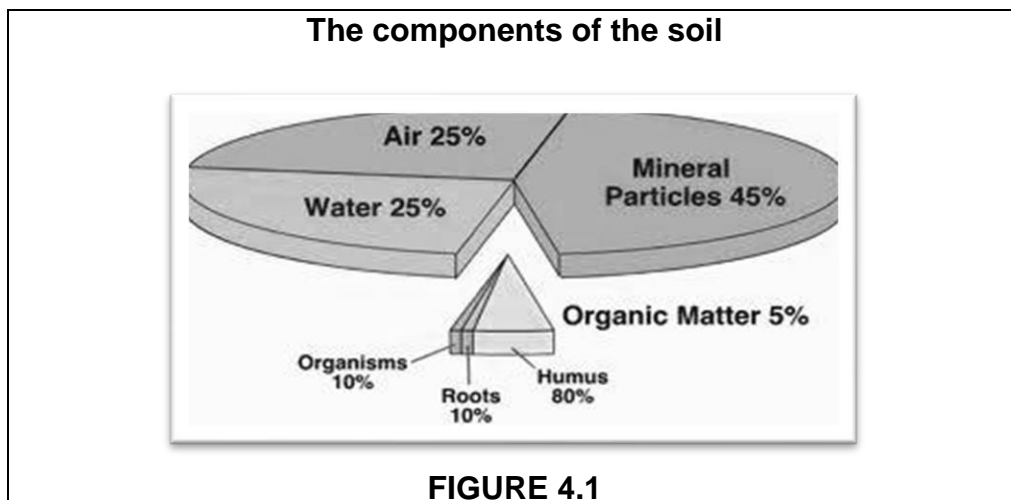
<b>Soil components</b>	<b>Volumetric composition</b>	<b>Volumetric composition expressed as degrees</b>
Mineral particles	45%	
Soil water	25%	
Organic matter	5%	
Soil air	25%	

6.4.1 Complete the table by expressing the volumetric composition of each soil component as degrees. Show all your calculations for each component. (4)

6.4.2 Using the results from the calculations in QUESTION 6.4.1 draw a PIE CHART representing the data in the last column of the table. Remember to provide a key and a heading. (4)

6.5 Give any FIVE characteristics that are used to identify and classify minerals. (5)

7.1



7.1.1 Give ONE reason why soil is important. (1)

7.1.2 Discuss the importance of humus in agriculture. (5)

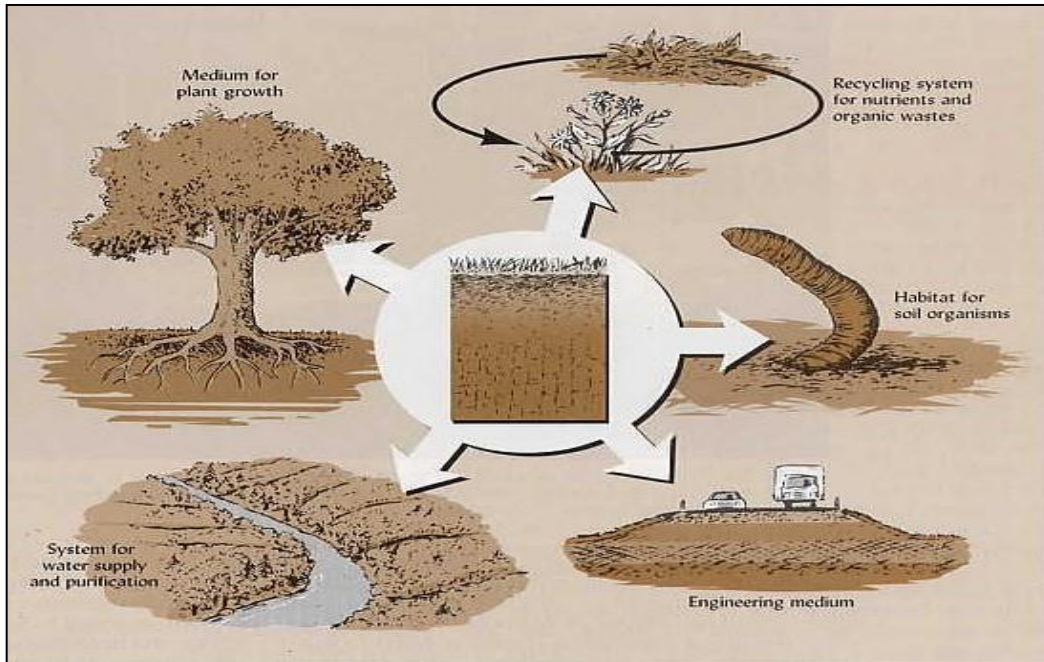
7.1.3 Soils have a distinct profile consisting of horizontal layers. How are these layers formed? (4)

7.2.1 How can aeration in the soil be improved? (4)

7.2.2 Describe the THREE characteristics used in mineral identification (6)

7.2.3 List FOUR soil – forming processes (Any 4x2) (8)

8. Soil is the basis for life. The soil is the thriving ecosystem for plants and animals.



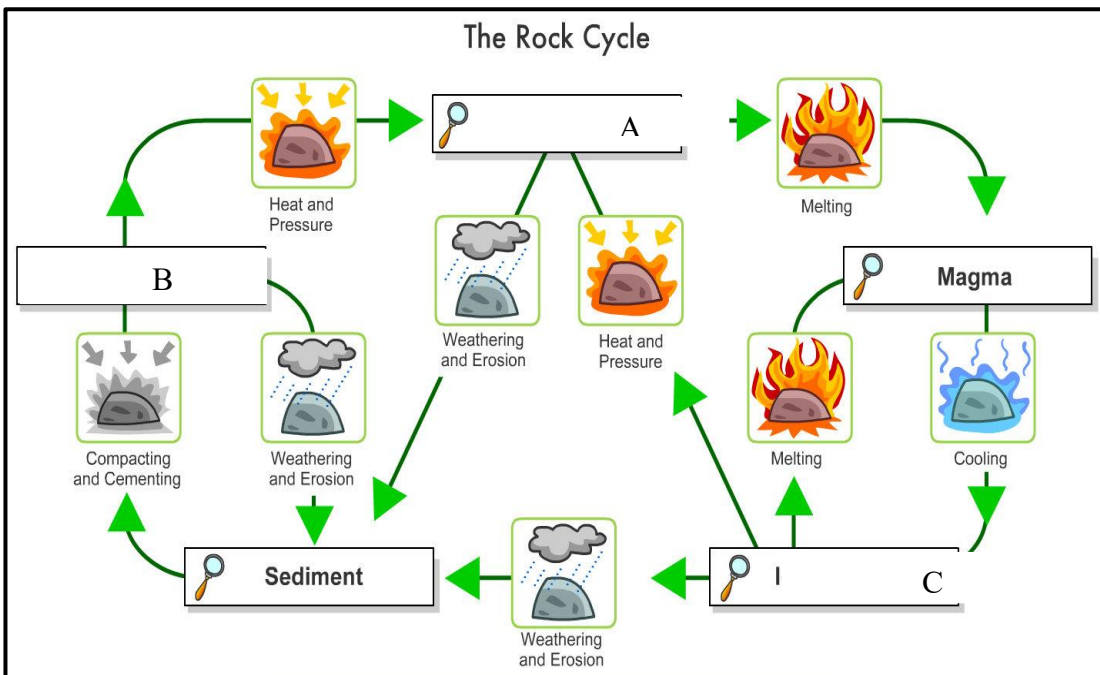
8.1 Deduce from the diagram above the main reasons why soil is so important? (5)

8.2 Suggest TWO advantages of mulching. (2)

**Week 9: Rocks & Formation**

**SOIL SCIENCE**

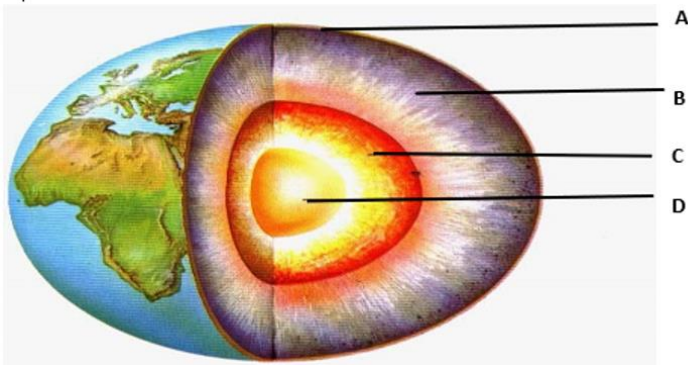
9.1



9.1.1 From the above diagram name THREE types of rock (3)

9.1.2 Soil formation is the result of weathering of rock. Describe THREE processes that leads to soil formation. (3x3) (9)

9.2



9.2.1 With the help of the diagram, explain TWO facts which prove that the earth's core is still very hot. (2)

9.2.2 Supply the labels for A, B, C and D. (4)

9.2.3 Which forces of nature are responsible for the formation of metamorphic rocks and what gives rise to those forces? (2)

9.2.4 What causes the typical layered appearance of sedimentary rocks? (2)

# MEMORANDUM

## Term 2: Week 1: Sustainable resource utilization:

### 1.1 Indigenous ways of farming:

1.1.1 Organic farming✓ (1)

- 1.1.2
- Feeding the soil✓
  - Improves soil structure✓
  - Binds sandy soil to improve water holding capacity✓
  - Binds sandy soils to slow down leaching of nutrients✓
  - Loosens up clay for better aeration and drainage✓ (Any 2) (2)

- 1.1.3
- Compost✓
  - Manure✓ (2)

### 1.2 Agricultural resources:

#### 1.2.1 Examples of renewable resources:

Sunlight✓ / Oxygen (2)

1.2.2

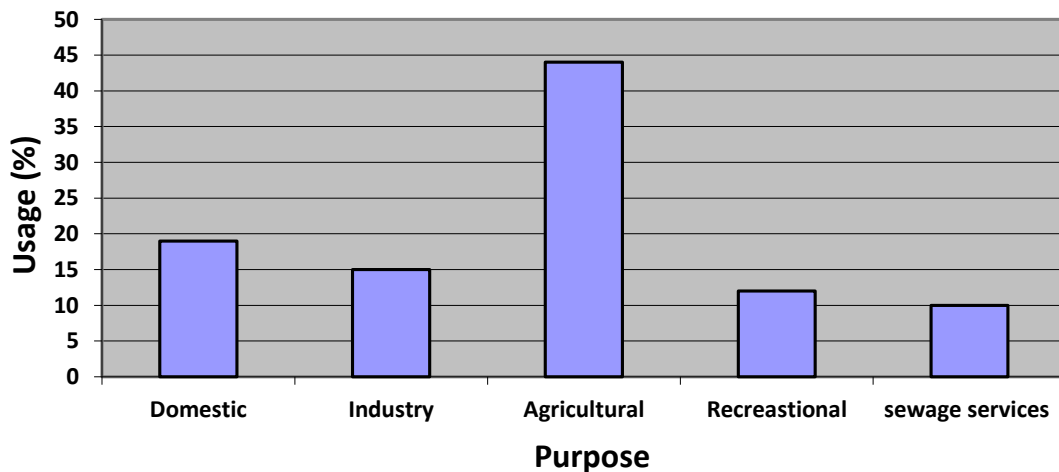
Renewable	Non-renewable
Oxygen✓	Coal✓
Wild Animals✓	Water✓
Sunlight✓	Forests✓

(6)

### 1.3 Water usage graph:

1.3.1

**Water purpose and usage expressed as percentages**



### Checklist for marking the graph

Criteria	No	Yes
A suitable title / caption for the graph	0	1√
Correct type of graph (i.e. bar graph)	0	1√
Units (%)	0	1√
Correct scale on the Y-axis and X-axis	0	1√
Labeling on Y-axis (Usage)	0	1√
Labeling on X-axis (Purpose)	0	1√

(Any 5) (5)

#### 1.3.2 Main sources of water:

- Permanent rivers√
- Dams√
- Aquifers√

(Any 2) (2)

### 1.4 Natural resources:

#### 1.4.1 Agricultural resource:

Natural substances that we use in agricultural production √ and process to achieve a specific goal, product √

or

Natural resources are materials or substances such as minerals, forests water and soil that occur in nature√ and can be used for economic gain. √

(2)

- 1.4.2
- Soil√
  - Water√
  - Sunlight√
  - People√
  - Veld/ Vegetation √
  - Forests√
  - Animals√
  - Wind/Air √

(Any 2) (2)

#### 1.4.3 Primary Resource: Resources that are entirely produced by nature√√

**Secondary Resources:** Resources that have been made from natural ones by man√√

(4)

- 1.4.4
- Soil surveys are done to determine the suitability of soil for agriculture and non-agriculture √
  - Data from the soil, climate and topography is used to determine which vegetation or animals have the best potential for production√

- Each type of soil (determined by mapping of the soil) can be described in full ✓ (2)

## **Week 2: Soil conservation and management.**

### **2.1 Soil degradation**

- 2.1.1 A- Donga/ gully erosion ✓  
 B- Channel erosion ✓  
 C- Sheet erosion ✓ (3)

- 2.1.2 A - Run-off water on steep slopes form dongas after heavy rains ✓  
 B – A series of parallel gullies are formed in the topsoil ✓  
 C – Incorrect agricultural practice where too many animals trample and strip the land exposing soil to water or wind ✓ (3)

- 2.1.3 Physical degradation ✓ – loss of soil production potential by physical means such as run-off, structure decline and compaction erosion. ✓ (2)

#### **2.1.4 Impact of livestock on vegetation**

- Dividing the veld into several camps according to their palatability ✓
- The number and size of the camps will be determined by veld management system ✓
- Each camp must have more or less the same carrying capacity ✓
- Providing easy to reach watering places, the number will depend on size and number of livestock ✓
- Practicing rotational grazing system ✓
- Destroyed veld must be fenced off to allow it to rest ✓
- Natural shelter and shade must be included where possible ✓ (2)
- Keeping/farming with the correct types of animals ✓
- Fodder crops must be fenced separately, to be used during times of drought ✓ (Any 2)

### **2.2 Agricultural pollution:**

- 2.2.1 Soil pollution is the contamination of soil ✓ with materials that are out of place such as DDT that are present at higher concentrations than normal / Buildup of toxic compounds in soil ✓ (2)

- 2.2.2
- Pesticides/ Herbicides ✓
  - Fertilisers ✓
  - Wrong irrigation methods leading to salination ✓
  - Agricultural wastes ✓
  - Spillages ✓ (Any 4) (4)

### **2.3. Veld management:**

- 2.3.1 Pasture production ✓ (1)

- 2.3.2
- Pasture production form part of rehabilitation ✓

- Soil is damaged and has a lower yield potential / not suited for high yield crops ✓ (1)
  - Land full of dongas, but livestock can thrive well in the area ✓ (Any 1)
- 2.3.3 (a) low rainfall / droughts / burning of pasture fields / overloading ✓  
 (b) soil erosion processes washed the topsoil away / running water after thunderstorms / no vegetative cover on soil ✓ (2)

### **Week 3,4 & 5: Water management & Pollution**

#### **3.1 Scenario:**

##### **3.1.1 Categories of soil water:**

- Capillary water / Cohesion water ✓
- Hygroscopic water / Adhesion water ✓ (3)
- Gravitational / Free water ✓

##### **3.1.2 Practical ways of conserving soil water:**

- Practice mulching in dry areas ✓
- Introduce organic matter into the soil ✓
- Control weeds regularly to reduce transpiration ✓
- Discourage soil erosion ✓
- Adopt farm practices, such as regular stirring of the topsoil, to promote infiltration ✓ (Any 2) (2)

#### **3.2 Indigenous ways of farming:**

3.2.1 Organic farming ✓ (1)

- 3.2.2
- Feeding the soil ✓
  - Improves soil structure ✓
  - Binds sandy soil to improve water holding capacity ✓
  - Binds sandy soils to slow down leaching of nutrients ✓
  - Loosens up clay for better aeration and drainage ✓ (Any 2) (2)

- 3.2.3
- Compost ✓
  - Manure ✓ (2)

#### **3.3 Agricultural pollution:**

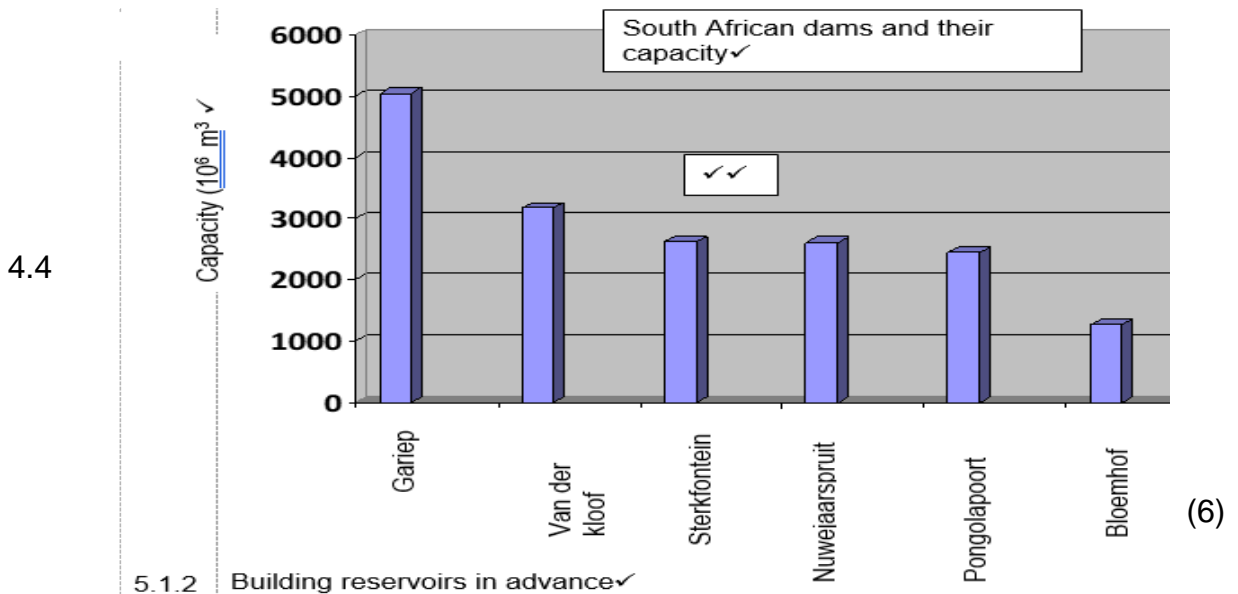
Any action that damages or destroys our natural resources ✓ especially soil, water or atmosphere and has the potential to influence the production potential of the areal negatively. ✓ (2)

#### **4. Water resources in South Africa**

- 4.1 The Gariep Dam is part of the Orange River Irrigation Project providing water for 22400 ha of agricultural land ✓  
 Drinking water for Bloemfontein and Port Elizabeth ✓  
 Providing electricity for the national grid ✓ (3)

4.2  $5041\checkmark - 1264\checkmark = 3777 \times 10^6 \text{ m}^3\checkmark\checkmark$  (5)

4.3 Irrigation $\checkmark$ , household water,  $\checkmark$  electricity supply $\checkmark$  and manufacturing $\checkmark$  (3)  
(Any 3)



## 5 Water cycle:

5.1 Water cycle / Hydrological cycle $\checkmark$  (1)

5.2 A = Infiltration / Absorption  $\checkmark$

B = Transpiration  $\checkmark$

C = Runoff  $\checkmark$

D = Evaporation  $\checkmark$  (4)

## Week 6,7 & 8: Soil and Minerals

### 6.1 Soil Profile:

6.1.1 O – horizon  $\checkmark$  (1)

6.1.2 C – horizon  $\checkmark$  (1)

6.1.3 B – horizon  $\checkmark$  (1)

6.1.4 R – horizon  $\checkmark$  (1)

### 6.2 Factors of soil formation:

- P: Parent material  $\checkmark$
  - R: Relief  $\checkmark$
  - Cl: Climate  $\checkmark$
  - O: Organisms/Human activities  $\checkmark$
  - T: Time  $\checkmark$
- (5)

### 6.3 Minerals and Rocks:

6.3.1

Primary minerals	Secondary minerals	Igneous rocks	Sedimentary rocks	Metamorphic rocks
Quartz✓	Montmorillonite✓	Granite✓	Shale✓	Gneiss✓

(5)

6.3.2 **Primary minerals:** are formed at high temperature and pressure under reducing conditions without free oxygen ✓ / These are minerals that occur in their original form during the formation of rocks. ✓

**Secondary minerals:** are formed at low temperature and pressure through oxidation ✓ / When primary minerals undergo physical and chemical changes, like oxidation and temperature variations they lose some of their original properties. ✓

(Any 2) (4)

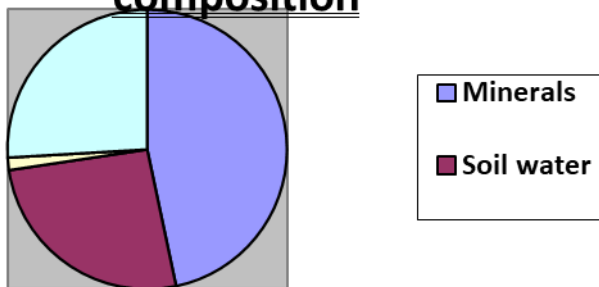
6.4 **Calculations and Graphs:**

6.4.1 **Convert percentages to degrees:**

Soil components	Volumetric composition	Volumetric composition expressed as degrees
Mineral particles	45%	$\frac{45}{100} \times 3600 = 162^\circ$ ✓
Soil water	25%	$\frac{25}{100} \times 3600 = 90^\circ$ ✓
Organic matter	5%	$\frac{5}{100} \times 3600 = 18^\circ$ ✓
Soil air	25%	$\frac{25}{100} \times 3600 = 90^\circ$ ✓

6.4.2

**Components of soil / Soil composition**



**Checklist for marking the graph**

Criteria	Mark allocation
A suitable title / heading for the graph	1 ✓
Accuracy for all the four components	1 ✓
Key showing representation for each component	1 ✓
Correct type of graph (i.e. pie chart)	1 ✓

6.5 **Characteristics of identifying minerals:**

- Colour ✓
- Luster ✓
- Hardness ✓
- Cleavage ✓
- Crystalline form ✓
- Density / Specific gravity ✓ (5)
- Magnetism/ odor/ conductivity/ fluorescence/ burn test ✓
- Fracture ✓
- Transparency ✓ (Any 5)

7.1 **Why is soil important for agriculture?**

- 7.1.1
- ☆ It provides plants with anchorage ✓
  - ☆ It provides nutrients/minerals and water for photosynthesis ✓
  - ☆ It is the habitat for micro and macro-organisms ✓
  - ☆ Some soil properties are used for commercial purposes ✓
  - ☆ Clay soil can prevent sunburn and for cultural decorations or clay pots ✓
  - ☆ It cleans water as it percolates to form spring water ✓
  - ☆ Soil prevents floods and droughts by absorbing rainwater, storing it and releasing it later ✓ (Any 1) (1)

- 7.1.2
- It is the life force of the soil/ helps the soil retain moisture/ encourage the formation of good soil structure ✓
  - Help suppress diseases in the soil ✓
  - The dark colour help absorb heat in the soil for microbial activities; seed germination and chemical reactions ✓
  - Improves soil structure by binding loose soil and preventing compaction ✓
  - Increases water holding capacity if the soil and prevents drainage / erosion ✓
  - Has great cation holding capacity, which makes it very fertile ✓
  - Has lasting effect as a source of plant nutrients in the soil ✓
  - Releases minerals stored in the decomposable materials in the soil for plants ✓ (Any 5) (5)

- 7.1.3 Chemical weathering ✓ ; eluviation ✓ ; illuviation ✓ ; organic decomposition ✓ (4)

- 7.2.1
- ☆ Cultivation/ tillage with normal tools. ✓
  - ☆ Ploughing. ✓

- ☆ Adding bulky organic material.✓
- ☆ Draining waterlogged areas.✓ (4)

- 7.2.2
- Colour✓: the colour of a mineral when it is powdered or scratched✓
  - Lustre✓: the way in which a mineral reflects light✓
  - Hardness✓: cleavage and fracture✓ / the way mineral breaks✓ (6)

- 7.2.3
- Mineralisation.✓
  - Humification.✓
  - Leaching.✓
  - Luviation.✓
  - Gley soil formation.✓
  - Plinthite formation.✓
  - Inversion.✓
  - Bioturbation.✓ (Any 4x2) (8)

8. 8.1 **The importance of soil:**
- Soil acts as a medium for the plant to grow in
  - It supplies nutrients and minerals to the plant
  - It Supply mineral resources for industry
  - It is a place where micro-organisms live
  - It acts as a sponge and catchment for water (5)

- 8.2 Mulches keep plants cool and aids water retention (2)  
It prevents the growth of weeds

## Week 9: Rocks & Formation

- 9.1 9.1.1
- Igneous rock✓
  - Sedimentary rock✓
  - Metamorphic rock✓ (3)

### 9.1.2 Soil Forming Processes

There are five key processes by which soil is formed, they are:

**Leaching** - leaching is the removal of soluble components of the soil column. As water washes down through the soil it can carry away bases such as calcium, held as exchangeable ions in clay-humus complexes, as well as acidification through the substitution of hydrogen ions. ✓✓✓

**Eluviation** - here soil particles held in suspension, such as clay, are removed (e.g. washed away). ✓✓✓

**Illuviation** - here soil particles held in suspension, such as clay, are accumulated (e.g. deposited). ✓✓✓

**Podsolisation** - podsolisation occurs when strongly acid soil solutions cause the breakdown of clay minerals. As a result, silica, aluminium and iron form complexes with organic substances in the soil. These minerals are removed from the surface zone of the soil and can accumulate in distinct dark sub-surface layers - very evident on inspection. Upland heaths and moors often contain pod soils. ✓✓✓

**Gleying** - gleying occurs in waterlogged, anaerobic conditions when iron compounds are reduced and either removed from the soil or segregated out as mottles or concretions in the soil. Marshy wetlands often contain gleyed soils. ✓✓✓

It is important to realise also that soil types are closely related to the shape of the landscape - or its 'topography'. Soil scientists use this to help them create soil maps. An experienced eye can determine changes in underlying soil types when walking through a landscape and observing changes in topography ✓✓✓ (Any 3x3) (9)

- 9.2 9.2.1   ▪ Volcanic eruptions –molten rocks✓  
              ▪ Hot springs✓ (2)
- 9.2.2    A- Crust✓  
              B- Semi –solid mantle✓  
              C- Solid center – metals ✓  
              D- Liquid magma ✓ (4)
- 9.2.3   Great pressures and high temperatures, because of earth's crust that shifts✓✓ (2)
- 9.2.4   Material was deposited periodically by wind, water or glacier action✓✓ (2)

The End